SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Date Form Completed: 10/17/14

General Site Information

Region:	7	City:	Grand Island	State:	NE
CERCLIS EPA ID:	NED981499312		CERCLIS Site Name:	Cleburn Street Well	
NPL Status: (P/F/D)	F		Year Listed to NPL:	1992	

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The Cleburn Street Well Site is located in Grand Island, Hall County, Nebraska. The Site is in an urban setting consisting of a mix of single-family residences, light manufacturing and retail shops. The VOC contamination at the Site is attributed to operations at three dry-cleaning businesses and a former solvent distribution company. The Site has been divided into OUs to address the distinct sources and groundwater plumes emanating from them. OU 1 and OU 2 refer to the former One Hour Martinizing dry cleaning business, OU 3 refers to Liberty Cleaners, OU 4 refers to Ideal Cleaners and OU 5 refers to the Nebraska Solvent Company. OUs 1 through 4 are fund lead and OU 5 is PRP lead with EPA oversight. Three public water supply wells have been removed from service due to Site contamination (Cleburn Street, Lincoln Street and Pine Street Wells). Future land use is not expected to change.

One of the major threats at the Clebrun Street Well Site is considered to be VOC-contaminated groundwater associated with OU 2. The majority of the city's residents are served by the city's municipal water supply. Another major threat at the Site is vapor intrusion (VI) which has been caused by contaminated soil and groundwater beneath the former OHM property. VI monitoring and evaluation is ongoing. A vapor mitigation system was installed in February 2014 within the former OHM property which is currently being used as a church.

General Project Information

Type of Action:	Remedial Action	Site Charging SSID:	07ES
Operable Unit:	02	CERCLIS Action RAT Code:	

Is this the final action for the site that will result in a site construction completion? Final action but already CC. ☒ Yes ☐ No

Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control? Already HEUC in short-term. Action will reduce time frame for Long-term Human Health Protection. ☒ Yes ☐ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

The contamination at the Cleburn Street Well Site was first discovered in March 1986 when the Nebraska Department of Health detected tetrachloroethene (PCE) at a concentration of 21.9 micrograms per liter (µg/L) at the Cleburn Street public drinking water supply well. The EPA became involved in 1987 to conduct a preliminary assessment and site investigations. Between 1990 and 1992, the EPA conducted a PRP search and sent 104 (e) information request letters to several parties associated with potential source areas identified during the initial investigations. Exemption 5 - AWP, AC [redacted] The EPA therefore determined there were no viable PRPs for OU 1 and OU 2 and initiated a fund-lead RI/FS. The Site was placed on the NPL on October 14, 1992.

The EPA conducted an RI/FS which resulted in an action memorandum to support a non-time-critical removal action in August 1993 which included installation and operation of one groundwater extraction well to address the most highly contaminated groundwater at the OHM source area. Upon implementation, groundwater was extracted at a rate of approximately 50 gallons per minute and discharged directly to the sanitary sewer for treatment at the city's publicly owned treatment works. This containment action continued until a permanent groundwater extraction and treatment system (GET) was constructed in 1998.

The EPA issued a ROD in June 1996. The selected remedies for the OHM property (OUs 1 and 2) were in situ soil treatment by soil vapor extraction (SVE) and treatment by carbon absorption; GET by on-site air stripping; institutional controls (ICs) to restrict groundwater use and prevent exposures; groundwater monitoring; and air monitoring of emissions from the air stripper and emissions control if necessary. The SVE and GET systems were determined to be operational and functional in October 1999. The 1996 ROD also selected natural attenuation and groundwater monitoring for ten years, ICs to restrict groundwater use and prevent exposures and a contingency of SVE for Liberty Cleaners (OU 3) and Ideal Cleaners (OU 4).

The required ICs were implemented in February 1998 when the city passed Ordinance No. 8363. This ordinance established a groundwater control area encompassing all OUs of the Site, restricted the use of groundwater pumped from within this area and required the registration of all new wells placed in the area.

In February 2000, the OU 1 SVE system was transferred to NDEQ for O&M. The OU 2 GET system entered into the ten-year period for LTRA on February 8, 2000. In 2006, NDEQ requested to shut down the SVE system based on soil vapor concentrations reaching asymptotic levels. The EPA agreed in February 2007 that the OU 1 remedy had achieved its intended purpose and indicated that any further operation of the SVE system would be conducted by the agency in association with its ongoing LTRA of the OU 2 remedy. The SVE system was operated intermittently by the EPA following shut down by NDEQ to measure system effectiveness at mitigating VI. A VI mitigation unit was installed in February 2014 based on the continued presence of elevated PCE sub-slab concentrations beneath the OHM property. The GET system operated continuously from its startup in 1999 through December 2009, with only brief shutdowns for maintenance and repairs. Optimization of the system was completed in early 2008 and included acid washing the extraction wells, installing new pumps and tuning the system. The GET system was turned off by the EPA in December 2009 to conduct an ISCO treatability study. The GET system was never transferred to NDEQ.

In 2006, the EPA began additional investigation activities at the OHM property to further delineate remaining residual contamination at the source area and groundwater contaminant plume. These additional investigations were reported on in the Focused RI Report (April 2011), and the Focused FS Report (March 2012). While the existing GET remedy at the facility has been largely effective in containing the plume, it did not address the groundwater at the source area or downgradient plume to a substantial degree, and did not appear to be adequate to meet the RAOs established in the 1996 ROD. Historical results from the LTRA sampling events indicate that groundwater contamination has not been decreasing in the monitoring well network, particularly in wells with high concentrations of PCE at the source area beneath the OHM property. The additional investigations depicted the presence of a silt/silty-sand layer located approximately 24 ft. to 39 ft. bgs at the Site. The majority of the PCE contamination beneath the OHM building is contained within this silt/silty-sand layer.

In December 2009, the GET system was shut down to conduct an ISCO treatability study. Potassium permanganate ($KMNO_4$) was injected through temporary wells in multiple locations within the source area and downgradient from the source area. The total volume of potassium permanganate injected into the source area was 34,500 gallons. An additional 13,154 gallons of permanganate was injected into the downgradient plume. The post injection performance monitoring results of the ISCO treatability study indicated the PCE concentrations decreased both at the source area and within the plume. However, the PCE concentrations as of March 2012 to present are similar to the concentrations detected prior to the ISCO injection evaluation treatability study. As of July 2014, a few groundwater samples collected at the source area still had a pink/purple color indicating residual permanganate is still present.

In 2010, the EPA conducted a time-critical removal action to excavate highly contaminated shallow soils at the OHM property. A metal grate was discovered beneath the floor of the facility during the installation of wells for the ISCO injection evaluation treatability study. The grate covered a sump-type structure with dimensions of approximately 4 feet wide by 8 feet long by 6 feet deep. A soil sample was collected from this area and results indicated 229 mg/kg PCE, which exceeds the site-specific cleanup goal of 0.89 mg/kg PCE. Twenty-four cubic yards of soil were excavated and disposed of at an approved solid-waste landfill located in Hastings, Nebraska. Sand surrounding the sump area was also excavated until no measurable levels of VOCs using a PID were detected.

Based on the additional information developed since the 1996 ROD was issued, the EPA amended the OU 2 remedial action to address the remaining residual contamination. The EPA issued a ROD Amendment in September 2012 selecting in situ thermal treatment of remaining source materials and in situ chemical and/or enhanced biological remediation of the downgradient plume. The ROD Amendment dated September 12, 2012 has the following components:

- In situ thermal treatment of groundwater and saturated subsurface soils at the contaminant source area.
- Long-term treatment of the groundwater contaminant plume via in situ chemical and/or enhanced biological remediation until the cleanup levels in groundwater for the COCs have been attained and verified.
- Periodic groundwater monitoring until the groundwater has achieved the cleanup levels for COCs in the area.
- Periodic vapor intrusion monitoring until the groundwater has achieved the cleanup levels for the COCs in the area.
- Installation of additional groundwater monitoring wells and/or sampling of additional public and private wells, if needed, to further determine the extent of the COC contamination, evaluate treatment processes and/or ensure protection of public health.

In situ thermal remediation will be implemented initially at the source area (OU 2) to treat the most highly contaminated source material within the silt/silty-sand layer. Performance monitoring will be conducted throughout the operational period of the thermal system to measure effectiveness. Groundwater and vapor intrusion sampling will be conducted quarterly for two years following shut down of the thermal system to measure the effectiveness of the source area treatment prior to implementing in situ chemical oxidation and/or enhanced biological remediation of the downgradient plume. Remedial design will be conducted for the downgradient plume in conjunction with the confirmatory sampling period to determine the optimal remedial technology, injection well locations, injection frequency and amount of treatment chemicals required.

Since the GET system has not been operated since December 2009, the remaining residual source area contamination is a continual source for the downgradient plume. Groundwater analytical results indicate migration of contaminants at concentrations exceeding the MCL has occurred beyond the downgradient edge of the monitoring well network and within the lower aquifer.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The September 2012 ROD Amendment requires temporary relocation of the OHM building occupants, in situ thermal remediation of the source area and in situ chemical and/or enhanced biological remediation for the downgradient plume.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

Construction Completion has been achieved.

Response Action Cost

Total Cost of Proposed Response Action:
($ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

$6,920,987

Source of Proposed Response Action Cost Amount:
(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc…)

September 2012 ROD Amendment and March 2012 FFS.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:
(If the estimated cost of the response action exceeds $10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

FY2015	$3,000,000	Temporary relocation of tenants, thermal system installation and operation and building restoration.
FY2016	$506,000	Performance monitoring
FY2017	$820,987	Injection event and monitoring
FY2018	$564,000	Injection event and monitoring
FY2019	$391,000	Injection event and monitoring
FY2020	$391,000	Injection event and monitoring

FY2021 $272,000 Injection event and monitoring
FY2022 – FY2030 $122,000 per year for monitoring
Total Cost - $6,920,987

Other information or assumptions associated with cost estimates?

1. The temporary relocation will likely be conducted by the U.S. Army Corp of Engineers.
2. All costs are based on estimates from the March 2012 FFS.

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

Superfund State Contract Amendment will be signed by March 2015.

2. If Non-Time Critical, is State cost sharing (provide details)?

Not applicable

3. If Remedial Action, when will Remedial Design be 95% complete?

May 2015 – Performance Work Statement will be complete to solicit contract bid proposals. The selected thermal vendor will provide 100% design prior to remedial action.

4. When will Region be able to obligate money to the site?

Region 7 would be able to obligate funds for the temporary relocation and remedial action as soon as the State Superfund Contract Amendment is signed and an Interagency Agreement is finalized with the U.S. Army Corp of Engineers to conduct the temporary relocation.

5. Estimate when on-site construction activities will begin:

September 2015

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

The site has been scheduled and published in Primavera.

Site/Project Name: **Cleburn Street Well**

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

The current land use in the vicinity of the Site is a mix of single family residences, light manufacturing and retail shops. Residents in the city are reliant on the local aquifer as a source of drinking water. The Cleburn Street Well contaminant plume has impacted three municipal drinking water supply wells which have been disconnected from public service. A Baseline Risk Assessment (BLRA) was prepared as part of the Focused RI/FS. The BLRA determined that installation of drinking water wells into the most contaminated portion of the aquifer would pose unacceptable carcinogenic and noncarcinogenic human health risks.

Regarding the vapor intrusion pathway, the OHM building had indoor air sample results that exceeded the PCE and TCE indoor air screening level. The sub-slab PCE concentrations are extremely elevated directly beneath the building. The results of recent groundwater sampling (summarized in the July 2014 Semiannual Report) indicate uncontrolled contaminant migration is occurring further downgradient and to the lower aquifer. Residential locations and commercial businesses could be impacted by vapor intrusion at locations above and near the contaminant plume.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

MEDIUM	<2yrs	<10yrs	>10yrs
Indoor Air	75		

Discuss the likelihood that the above exposures will occur:

For the VI pathway, the OHM structure located above the groundwater contaminant plume has been identified where indoor air and sub-slab risk-based screening levels have been exceeded. Three other business locations are currently being evaluated for the VI pathway. The congregation that attends services at the church (OHM building) consists of an average of 50 individuals. A VI mitigation unit was installed in the church in February 2014. VI sampling is continuing and more structures may be identified in the future where either indoor air or sub-slab screening levels are exceeded.

Other Risk/Exposure Information?

None

Site/Project Name: **Cleburn Street Well**

Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

A primary concern at the Site is that highly concentrated levels of VOCs within the silt/silty-sand layer and groundwater at the OHM source area continues to migrate uncontrolled to the lower aquifer and downgradient portions of the plume. If no actions are taken, the contaminant plume would continue to migrate and would cause more above-ground structures to exceed VI action levels. The city implemented a city ordinance that limits use of private wells within the groundwater use control area. However, without EPA funding, the source area will continue to release contamination to the groundwater plume that will cause the plume to increase in regard to contaminant concentrations and mobility. The plume could migrate outside of the groundwater use control area.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

No. The GET system has been off since December 2009 to conduct an ISCO treatability study. Based on recent groundwater analytical results, PCE contamination is migrating downgradient of the monitoring well network and to the lower aquifer. The GET system may be turned back on for containment purposes however, groundwater samples collected also have the presence of permanganate "purple water" which would need to be addressed prior to extraction and discharge to the sanitary sewer. The Focused RI also determined the GET system is unable to draw contamination from the silt/silty sand layer where the majority of the contamination is located.

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No, the contaminants are not in a physical form that limits the potential to migrate from the site.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

Yes, institutional controls have been implemented at the Site. The city of Grand Island has enacted an ordinance, No. 8363, restricting both the extraction and use of groundwater and the installation of new groundwater drinking supply wells. However, without EPA funding, the source area will continue to release contamination to the groundwater plume that will cause the plume to increase in regard to contaminant concentrations and mobility. The plume could migrate outside of the groundwater use control area potentially impacting indoor air within residences and commercial businesses.

Other information on site/contaminant stability?

None

Site/Project Name: **Cleburn Street Well**

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

Contaminant	Media	*Concentrations
PCE	Soil	Max – 100,000 µg/kg within the source area
PCE	Groundwater	Max – 140,000 µg/L within the source area
PCE	Indoor Air	Max – 89 µg/m^3 indoor air in church
PCE	Sub-slab Air	Max – 220,000 µg/m^3 sub-slab beneath the church
TCE	Soil	Max – ND
TCE	Groundwater	Max – 370 µg/L
TCE	Indoor Air	Max – 1.6 µg/m^3 indoor air in church
TCE	Sub-slab Air	Max – 520 µg/m^3 sub-slab beneath the church

*(*Concentrations: Analytical results presented were collected during the Focused RI activities and data collected since the date of the ROD Amendment.*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*

Tetrachloroethene (PCE) - "Likely to be carcinogenic to humans by all routes of exposure" according to a final assessment in February 2012 by the EPA IRIS program. The EPA requires remedial action when the cancer risk exceeds 1 x 10^{-4} and the HI exceeds 1. Maximum PCE groundwater concentration is 140,000 µg/L. The total carcinogenic risk estimate for a child or adult resident who may be exposed to contaminated groundwater in the future exceeds the EPA's acceptable level of 1 x 10^{-4} and the noncancer HI exceeds 1.

RME Scenario for future child and adult resident:
Cancer Risk = 5 x 10^{-1}
Noncancer HI = 450

Trichloroethene (TCE) – "Carcinogenic to humans by all routes of exposure" according to a final assessment in September 2011 by the EPA IRIS program.

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION (µg/kg)	SITE-SPECIFIC CLEANUP LEVEL for protection of groundwater (µg/kg)
PCE	Soil	100,000	890
TCE	Soil	ND	53

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION (µg/L)	CLEANUP LEVEL is the MCL (µg/L)
PCE	Groundwater	140,000	5
TCE	Groundwater	370	5

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION ($\mu g/m^3$)	*EPA Reg. 7 Screening Level ($\mu g/m^3$)
PCE	Indoor Air	89	42 (noncancer)
TCE	Indoor Air	1.6	2.1 (noncancer)

*Screening level is based on either a 1×10^{-5} cancer risk or HI of 1 whichever is lower.

Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc.....)*

The majority of the PCE contamination is located within the silt/silty-sand layer beneath the former OHM building approximately 24 ft. to 39 ft. bgs. PCE concentrations detected at the site within this layer are extremely high. The silt/silty-sand layer beneath the former OHM building will be addressed by in situ thermal remediation.

A DNAPL source may be present if the groundwater concentrations of a contaminant exceed 1% of its solubility. In the case of PCE, 1% of its solubility (200,000 ppb) is 2,000 ppb. PCE concentrations have been detected in groundwater at the source area at 140,000 µg/L indicating the potential presence of DNAPL. Residual DNAPL can exist as ganglia in the vadose zone or saturated zone and not necessarily in a defined pool which is probably the case at this site.

A groundwater fate and transport model was included within the Focused FS completed in 2012. This modeling indicates the contaminant plume would continue to migrate outside of the groundwater use control area if no action is taken. The contaminant migration could also impact residential locations and commercial businesses via vapor intrusion.

Other information on contaminant characteristics?

NA

Site/Project Name:	Cleburn Street Well

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

There is no documented observation or prediction of an ecological impact at this Site.

Would natural recovery occur if no action was taken? ☐ Yes ☒ No
If yes, estimate how long this would take.

Natural attenuation of the PCE plume is occurring based primarily on the presence of degradation products. It is suspected that this was accelerated by the 2009/2010 ISCO pilot study; however, the rate of natural attenuation is not sufficient to remediate the plume within a reasonable time frame.

Other information on threat to significant environment?

None

Site/Project Name:	Cleburn Street Well

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The Proposed Plan was out for public comment from April 25 to May 25, 2012. The EPA held a public meeting to present the Proposed Plan and preferred alternative on May 8, 2012. Questions and comments regarding the preferred alternative and other site-related issues were discussed at the meeting. The EPA has received communication including a letter of support for the preferred alternative. The EPA summarized and responded to all questions and comments received during the comment period in the Responsiveness Summary which is included in the ROD Amendment.

Describe the degree to which the State accepts the response action.

The State has concurred on the remedy in the September 2012 ROD Amendment.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

It is anticipated the remedial design will be completed in early 2015. It is estimated the in situ thermal remedy would take approximately 6 months to construct and would operate for approximately 6 months. Therefore, if funding is provided, it is expected the thermal system could be constructed and operational in less than a year.